Completed Pollution Prevention Project Case Study

United States Department of Energy
Office of Environmental Management
Fact Sheet

Recycling Oil from Radiological Control Areas

Los Alamos National Laboratory

Original Problem

All of the oil that originated from radiological control areas was screened for radioactivity using a liquid scintillation detection test. The analytical process for tritium uses light rays to detect radiation. Due to the dense matrix of oil, tritium analysis almost always showed that the oil contained tritium, although this was rarely true. All of these drums of oil were treated as potentially contaminated and therefore disposed of as radioactive waste even though a high percentage of the drums were generated in ways in which contamination could not have occurred. Instead of recycling the oil, it had to be sent away as radioactive waste at a very high cost.

The Project Solution

ESH-19 commissioned American Radiation Services to develop a new test that can accurately determine whether used oil contains any radioactive contamination that would prevent it from being recycled. The new test involves an oxidation procedure that can detect the presence of any radioactive isotopes.

Value of Improvement

Now there is an accurate test to determine whether used oil contains any radioactive contamination, and false positives for tritium are no longer a problem. If no contamination is detected, the oil can be recycled. Each drum that can be recycled instead of sent away as radioactive waste saves the generating group about $7000. The new test allow a much higher percentage of oil originating in radiological control areas to be recycled.

Lifecycle Waste Reduction	
Lifecycle Waste Reduction	>500gal / year
Commencement Date	2001
Project Useful Life (Years)	Indefinite

DOE Monetary Benefits	
Total Project Cost	~$300 per sample
Lifecycle Savings	~$7000 per drum
Return on Investment	NA

Benefits At-A-Glance

- Many of the drums of oil that were previously characterized as radioactive waste just because they originated from a radiological control area can now be recycled after it is proven that no contamination in the oil exists.
- Each drum of potentially contaminated oil costs about $7000 to send away as radioactive waste, but the new test only costs about $300.
- American Radiation Services has a way to screen oil for radioactivity, and now other institutions may be able to recycle more oil and save money as well.

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Summary Data	
Priority Area:	Waste Minimization Projects
Project Type:	Process Redesign
Total Project Cost:	~$300 per drum to screen for radioactivity
Lifecycle Savings:	Recycling fees are minimal, but disposing of a 55-gallon drum of radioactive oil costs ~$7000
Implementing Group:	ESH-19
Benefiting Groups:	LANL groups with radiological control areas
Useful Life Years:	Indefinite
Return on Investment:	NA
Lifecycle Waste Reduction:	Varies, but usually >500gallons per year
Project Contact:	Dustie Rich
Phone:	(505)665-0792
Email:	stephensd@lanl.gov